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In a memoir on the Iguanodon and Hylæosaurus (Phil. Trans. 1849), Dr. Mantell states that he had been able to obtain slices of one of these spines for microscopical examination, and that their internal structure was identical with that of the acknowledged dermal scutes of the same reptile. Still the true form of the articulating surface of the base of these spines was unknown, every specimen being imperfect in this respect. At length, after the lapse of eighteen years, Dr. Mantell obtained, through the liberality of Mr. Peter Fuller of Lewes, from the very quarry in which the original specimen of Hylæosaurus was found, the spine figured and described in this communication, in which the base is sufficiently entire to show that the mode of implantation in the skin was identical with that of the true dermal scutes; thus confirming the author's original interpretation of these remarkable appendages having constituted a serrated crest along the back of the Hylæosaurus. The specimens, and the microscopical sections, were exhibited to the Society.

4. "On the Variations of the Sulphates and Phosphates in the Urine in Disease." By Henry Bence Jones, M.D., F.R.S.

The object of the paper is to show whether the sulphates in the urine are increased or diminished in any class of diseases. The corresponding variations of the phosphates were determined. The particular conclusions may be thus stated:—

1. In three cases of acute chorea the most remarkable increase was observed in the amount of sulphates in the urine. In the same cases the quantity of urea was very much increased. The quantity of urine made in twenty-four hours was not excessively diminished, and the total amount of earthy and alkaline phosphates was below the average amount, sometimes remarkably less than in health.

2. In delirium tremens and in other delirium a remarkable increase in the amount of sulphates in the urine was frequently observed, and the total amount of phosphates was in the same cases occasionally remarkably diminished; and the resemblance to the state of chorea was still closer, inasmuch as occasionally a very great excess of urea was found in these cases also.

3. In acute inflammatory affections of the nervous structures, during the most febrile symptoms, an increase was observed in the amount of sulphates in the urine; and the total amount of earthy and alkaline phosphates in these diseases was increased in the same proportion as the sulphates were increased.

4. In some slight and chronic diseases of the nervous structures no increase in the amount of sulphates in the urine was observed, excepting when sulphate of magnesia had been taken.

5. In acute diseases, in which neither the nervous nor the muscular structures were chiefly affected, no increase in the sulphates or phosphates was observed, except after sulphate of magnesia.

6. In chronic diseases, in which neither the nervous nor the muscular structures were chiefly affected, no decided increase in the sulphates or phosphates in the urine was observed, except after sulphate of magnesia. One case of exostosis may be regarded as a doubtful exception to this statement.

The genera conclusions are—

That in acute chorea, in which the muscles are in excessive action, the sulphates and urea in the urine are greatly increased.

That in delirium tremens the same state of urine is frequently met with when the phosphates are not at all increased.

That in acute inflammation of the nervous structures sulphates and phosphates are both increased in the urine.

That in chronic diseases of the brain, and in other acute and chronic inflammations, no increase of the sulphates is observed except after sulphate of magnesia.

The result is that muscular action increases the sulphates in the urine without increasing the phosphates; and that inflammation of the brain increases the sulphates as well as phosphates in the urine.

5. "Second Appendix to a paper on the Variations of the Acidity of the Urine in Health." By Henry Bence Jones, M.D., F.R.S.

In a previous paper and appendix, the effect of different diets, of sulphuric and tartaric acids, of caustic potash and tartrate of potash on the acidity of the urine was traced. In this appendix tartrate and carbonate of ammonia are the substances whose influence is determined, the object being to examine the comparative effect of fixed and volatile alkalies.

The first day two drachms of tartrate of ammonia were taken in distilled water, the second day 288 grains were taken, and the third day 177 grains.

Comparative experiments were made when no tartrate of ammonia was taken; the result was that tartrate of ammonia caused no perceptible diminution of the acidity of the urine. The difference between tartrate of ammonia and tartrate of potash may be shortly stated thus: two drachms of tartrate of potash made the urine alkaline in thirty-five minutes after it was taken, whilst three drachms of tartrate of ammonia produced no perceptible effect on the acidity of the urine.

The sesquicarbonate of pharmacy was then tried. The first day 18 grains were taken dissolved in distilled water, the second day 40 grains, the third day 80 grains. Comparative experiments were made without the volatile alkali, and it was found that in these doses carbonate of ammonia did not diminish the acidity of the urine; on the contrary, the acidity was higher than usual, and it was increased for twenty-four hours after the volatile alkali was taken.

Further experiments were made with 80 grains of carbonate of ammonia on two different days: no diminution of the acidity of the urine was produced on either day. The first day the quantity of urine was much increased, and thus probably an increase in the acidity of the urine was not evident. The second day on which the carbonate of ammonia was taken the increase in the acidity of the urine was perceptible.

Thus the effect of volatile alkali on the acidity of the urine is totally distinct from the effect of fixed alkali; and the author considers, that by determining the variations of the nitrates in the urine, the cause of this difference will be discovered.